# Third Congress of Toxicology in Developing Countries: Together for Human and Environmental Welfare

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The Third Congress of Toxicology in Developing Countries was held in Cairo, Egypt, 19–23 November 1995. Toxicologists from all parts of the world discussed various topics of concern that related to the growth of developing countries. At the same time, attempts were made to identify the crucial areas of concern and to assign priorities for future major research and development initiatives. Many important items identified during the course of this conference may be of little significance in some of the world's developed nations, but for many of the developing nations, not even the most basic means of handling toxic chemicals exist.

The Congress was organized by the National Research Centre and held under the auspices of President Mohamed Hosny Mubarak, president of the Arab Republic of Egypt, and under Honorary President Venice K. Gouda, minister of scientific research. The 5-day congress was attended by over 250 Egyptian and 150 foreign delegates representing about 30 countries.

The third congress was a continuation of basic themes developed in the first and second congresses held in Agentina in 1987 and in India in 1991, respectively. Cooperation, understanding, and exchange of knowledge with toxicologists from the developed nations were the keys of past success. The theme of the third congress was "Together for Human and Environmental Welfare."

The major concerns expressed during the conference were:

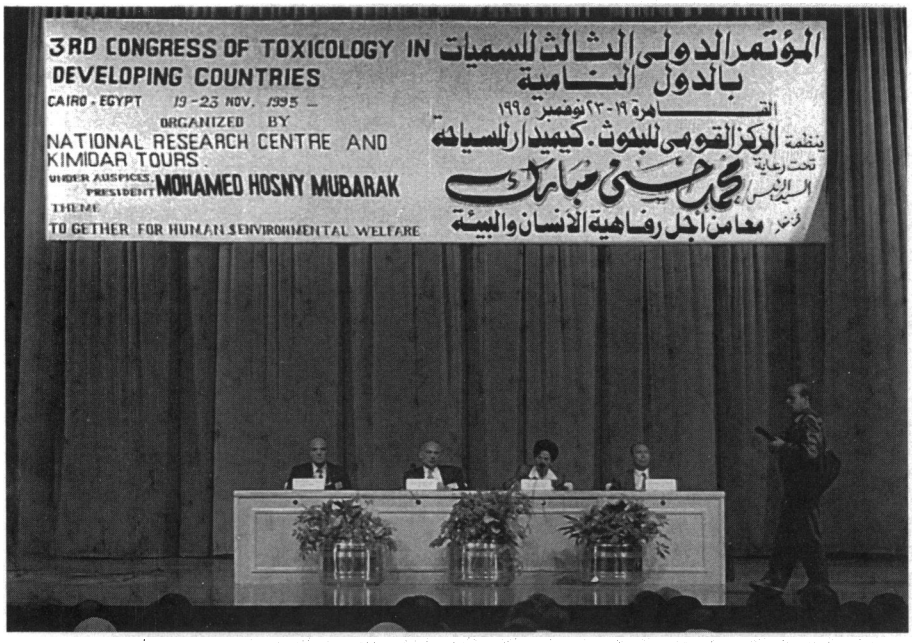
•Protection and/or remediation of the environment have become global issues, and therefore databases on toxicological aspects of disease and environmental health currently being developed around the world must be shared with developing countries.

•The use of hazardous substances and industrial chemicals is rising sharply in developing countries, and there is evidence that the problems arising from that usage is serious. The scientific literature on the nature and extent of the problems associated with hazardous substances in developing countries is scarce.

•A number of banned or severely restricted compounds are still exported from developed countries. In addition, several developing countries increasingly produce and sell hazardous substances, including substances banned elsewhere.

•The responsibility of selecting and importing hazardous substances lies mainly with the governments of developing countries. However, the realization that exporting countries are also responsible for the risks posed by hazardous substances in importing countries has led to the international adoption of the principle of "prior informed consent" (PIC). According to this principle, the export of a substance that is banned or severely restricted in the exporting country and that is included in the international PIC list may not proceed without the agreement of the relevant authority in the importing country. In addition, industrialized countries should furnish the information and resources necessary for proper risk management, together with products and equipment that can be safely used under hazardous conditions.

•The developing brain of the child before birth and in early life is particularly vulnerable to insult from many substances. Several toxicants (e.g., pesticides, food additives, drugs, and priority chemicals) can produce permanent alterations in brain development and function, with subsequent effects on learning ability and behavior. Such adverse neurological effects are more pronounced in developing countries due to the involvement of women and children in farming and industries.




**Inauguration of the Third Congress of Toxicology in Developing Nations** at the Cairo International Conference Center, Cairo, Egypt. Seated (from left to right) are S. A. Mansour, vice president and secretary general of the third congress; M.N.Y. Aboul-Eneim, president of the National Research Centre, Egypt; V.K.J. Gouda, minister of scientific research; and A.G. Radwan, secretary of the Egyptian Society of Toxicology.

## Education

Toxicology has emerged as an important multidisciplinary area of biomedical research. Toxicology should be included in university curriculae as well as in medical school curriculae. The present level of teaching research, especially in developing countries, is inadequate. Awareness of toxicology and environmental health should be promoted by including these subjects in primary education.

Most of the human hazards from agrochemicals are due from use without adequate precautions and misuse. Education and training are needed in proper methods of application and applicator hygiene and adequate protection during packing, storage, and transport of pesticide products. That toxic chemicals can pose severe health hazards unless handled properly needs to be emphasized in public education and in the media.

The organizing committee is indebted to the sponsors of this congress.

A great deal of concern has been expressed about the global warming phenomenon, ozone layer depletion, and climate change. Public education is needed to promote awareness of the causes and effects of these phenomena.

## Toxicity Standards

The impact of chemicals on humans, animals, plants, and ecosystems need to be assessed properly, and suitable guidelines should be developed to minimize the potential health risks. The interactions of xenobiotics in living organisms should receive considerable attention. All chemicals and drugs should undergo toxicological evaluation using state-of-the-art techniques before they are released into the market. Chronic studies should be done to determine possible genetic, neurobehavioral, and immunological risks from new drugs and chemicals. Immunotoxicological evaluation of chemicals is essential because many chemicals harm the immune system, making the host susceptible to diseases. Toxicological studies of the effects of chemicals during the prenatal and postnatal period are essential.

Simple-to-use assays and cheap waste treatment technology should be developed. Also, suitable and reliable procedures for monitoring environmental pollutants and remediating the environment should receive special consideration.

It may be necessary to develop national standards for each country based on the existing health status of its citizens, since predisposing factors such as extreme heat or cold, humidity, malnutrition, immunosuppression, and disease status may enhance the effect of toxic chemicals.

The mode of action of various chemicals should be studied in depth at the cellular and subcelluar levels. Molecular biology and genetic engineering should be used to elucidate the molecular mechanism of toxic chemicals. Toxicological phenomena should be modeled mathematically.

Preventive toxicological studies should be carried out to develop possible antidotes against a variety of toxic chemicals. At present there is a serious gap in this area. Diagnostic tests for toxicosis induced by various substances need to be developed. In addition, more simple, less costly alternative models for toxicity testing need to be developed. In general, more emphasis on research and development relating to toxicology is required in developing countries. Research on replacing hazardous chemicals with safer alternatives should be encouraged. Each country should establish a "toxicology map" of available data. Pollution control measures at all levels may be implemented by initiating the National Mission Programme.

**Third Congress of Toxicology in Developing Countries**

Organized by the National Research Centre, in collaboration with the Kimidar Group

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The Egyptian Holding Companies
International Society for the Study of Xenobiotics
Department of Toxicology, Oregon Health Sciences University

**Egypt Cup for the Promotion of Scientific Research in Developing Countries.** This cup, donated by the Egyptian organization, will be passed each year to the host nation. At the third congress, it was passed to Semra Sardas, a representative of Turkey, where the next congress will be held in 4 years.

## Legislative Control

Strict legislative guidelines should be introduced regarding the manufacture, export, import, storage, transport, use, and disposal of hazardous chemicals. Special precautions should be taken with non-biodegradable and persistent chemicals because they pose a serious threat to ecological systems.

Measures should be taken to avoid construction of new residences on waste dump sites, as toxic chemicals accumulated over time might pose a human health risk.

The international sale of hazardous chemicals should be controlled by the United Nations. Any country banning a hazardous chemical should not export that chemical to other countries.

Special emphasis is required to abate air, water, and soil pollution. Food adulteration should be prevented by strict measures. Air pollution from car exhausts and chimneys need to be severely curbed. Lead-free petrol should be introduced.

Environmental management programs should be integrated into planning processes in all construction projects, agriculture, and industry. Restrictions on logging should be imposed.

## Conclusion

Global cooperation should be practiced to avoid toxicological catastrosphes. In this spirit of cooperation and sharing information, the working committee suggested the establishment of a "Third World Academy of Toxicology" to address the toxicological problems and needs of developing nations.

Throughout discussions during the symposium on Industry and Environment in Egypt (Egyptox), the participants stressed the importance of holding an annual conference highlighting issues of concern to industry, agriculture, and other activities that impact the environment in Egypt. In response, the organizing committee will organize an "Egyptox Conference" to be held in Egypt every 2 years.

It was recommended that the Congress of Toxicology in Developing Countries should continue to be held every 4 years in various parts of the world to highlight toxicological and environmental problems of the developing world. The next meeting will be held in Turkey in 1999. Semra Sardas and Turkish delegates received the "Egypt Cup for Scientific Research Promotion in Developing Countries."